January 16, 2003

Mr. Jamie Dunn
Regional Hydrogeologist
WDNR – Northern Region
P.O. Box 309
Spooner, WI 54801

RE: URS Project No. 05644-098
AOC Work Plan No. 1
Supplemental Site Investigation and Piezometer Installation
Upland Operable Units
Ashland Lakefront Site, Ashland, Wisconsin

Dear Mr. Dunn:

URS has prepared this Work Plan to complete characterization of the upland operable units at the Ashland Lakefront Site. These units include the filled ravine on the Xcel Energy property, and the deep Copper Falls Aquifer. It also addresses additional sampling of surface soil, subsurface soil and sampling for potential vapor emissions from coal tar sources, to characterize the potential direct contact and inhalation pathways for human health. Finally, the work plan addresses geophysical borehole logging for detailed geologic characterization at the site. These sampling efforts were discussed during technical meetings between WDNR, USEPA and Xcel Energy on November 4 and November 19, 2002, and January 6, 2003.

This work plan describes in detail one of multiple work scopes intended to append to an Administrative Order on Consent (AOC) under development. As such, we have identified this document as AOC Work Plan No. 1 and its implementation is contingent upon agency approval and the approval of the final AOC and other work scopes to be developed pursuant to the AOC.

1.0 SCOPE OF WORK

URS will complete the following tasks:

Task 1 – Project Management

Following the approvals noted above, URS will make the necessary preparations for the installation of proposed wells, and collection of additional soil and groundwater samples. URS will contact Diggers Hotline for utility clearance and schedule the site work with a drilling contractor. Additionally, URS will contact adjacent property owners to obtain access to building interiors for the purpose of collecting indoor air samples to evaluate potential vapor intrusion, and installing monitoring wells. The installation of off-site wells will be contingent upon obtaining access from the property owners. The WDNR will be notified of the field schedule a

minimum of 5 working days prior to well installation, as well as prior to the collection of air and soil samples.

Task 2 – Piezometer Installation

As described above URS is prepared to initiate the tasks described in this work plan following approval of and incorporation in the final AOC (along with other work scopes under discussion) currently being developed between Xcel Energy, Inc. and the WDNR/USEPA.

Additional piezometers will be installed on at the Ashland Lakefront Site at the locations shown on Figure 1. These wells will be installed as follows:

- MW-2C will be installed adjacent to existing wells MW-2R/MW-2AR in the underlying bedrock unit at an estimated depth of 200 feet;

- MW-7B will be installed adjacent to MW-7A in the former seep area at a depth of 55 feet below ground surface (20 feet deeper than MW-7A);

- MW-15A and MW-15B will be installed adjacent to existing well MW-15 located south of the Xcel Energy service center building. Piezometer MW-15A will be installed at a depth of 35 feet below ground surface, and piezometer MW-15B will be installed at a depth of 55 feet below ground surface;

- MW-21B will be installed adjacent to existing well MW-21A on the adjacent property east of the Xcel Energy facility at a depth of 55 feet below ground surface (20 feet deeper than MW-21A); and

- MW-23A and MW-23B will be installed in Kreher Park north of MW-21A and west of MW-7A. Piezometer MW-23A will be installed at a depth of 35 feet below ground surface, and piezometer MW-23B will be installed at a depth of 55 feet below ground surface.

Because MW-2C will be installed in an area where coal tar has been encountered, an outer well casing consisting of 6-inch diameter black iron casing will be installed to a depth of 60 feet. A 6-inch diameter boring will be advanced through the outer casing. Soil samples will be collected at 5-foot intervals below 60 feet, and visually classified by a URS geologist. A piezometer consisting of 2-inch diameter schedule 80 PVC well casing and screen will be installed in the uppermost bedrock. A well screen 5-feet in length with 0.010-inch slot size openings will be installed a minimum of 10 feet below the bedrock surface. The sand pack will be placed around

the well screen, and the annular space seal will be backfilled with bentonite slurry tremied in place. The well will then be encased in flush mount protective well casing cemented in place.

The remaining peizometers will be installed in borings advanced with 4-1/4-inch ID hollow stem augers. Soil samples will be collected at 5-foot intervals from the ground surface with a split-barrel sampler, and visually classified by a URS geologist. Soil samples will be field screened with a photoinization device (PID) equipped with a 10.6 eV lamp. Field screening results will be used to select screen depth intervals. If coal tar is observed in recovered soil samples, the shallow piezometer well screen will be placed at that interval. If coal tar is not encountered in recovered soil samples, then the shallow piezometer will be installed at the Miller Creek/Copper Falls interface. The deep piezometer will be installed in the Copper Falls formation 20 feet below the shallow piezometer. Both piezometers will be constructed with a 2-inch diameter schedule 40 PVC well casing and screen, and encased in flush mount protective well casing. Well screens five feet in length with 0.010-inch slot size openings will be used. The sand pack will be placed around the well screens as the augers are removed, and the annular space seal will be backfilled with bentonite slurry tremied in place. Access for well installation at the Kreher Park locations will be contingent on obtaining access from the City of Ashland.

A minimum of 12 hours after well installation, each well will be developed by removing ten well volumes of water. The elevation of the top of each PVC well casing will be surveyed relative to site datum. Drill cuttings will be temporarily stored on site until arrangements for disposal can be made. Purge water will be collected and discharged to the on-site treatment building.

Task 3 – Borehole Geophysics and Well Casing Visual Inspection

Following the installation of well MW-2C, borehole geophysics will be performed to verify subsurface geologic conditions. Borehole geophysical tools will include a natural gamma survey and an induction log (electro magnetic conductivity) survey on well MW-2C. As described in Task 2 above, well MW-2C will be installed with an outer black iron pipe casing. Because this outer casing will interfere with the geophysical survey, well MW-2BR will be utilized to log geologic conditions to a depth of 70 feet, and MW-2C will be utilized to log conditions below 70 feet.

Additionally, borehole geophysics will be performed on wells MW-2A(NET) and artesian wells AT-1 and AT-2 in Kreher Park. Well casings for AT-1 and AT-2 will also be visually inspected and recorded on video tape with the aid of a downhole video camera. The borehole geophysical survey and visual inspection of the wells located in Kreher Park is contingent upon obtaining access from the City of Ashland.

Task 4 – Supplemental Source Area Site Investigation/Subsurface Soil Background Sample Collection

Additional soil samples will be collected from approximately 37 Geoprobe borings advanced in a regular grid pattern in the vicinity of the former MGP facility south of St. Claire Street. As shown on Figure 1, borings will be advanced inside the Xcel Energy building in the vicinity of boring B-31 located in the former MGP building, inside the portion of the Xcel Energy building between the courtyard and alley, in the courtyard area, and in the alley. These soil samples will be used to further characterize contamination in the vicinity of the former MGP.

Geoprobe borings will be advanced a minimum of five feet below the base of the filled ravine, or to a maximum depth of 20 feet. Soil samples will be collected continuously, and visually classified by a URS geologist. Samples will be collected every two feet, and field screened with a photo-ionization detector (PID) equipped with a 10.6 eV lamp. Field screening results will be used to select soil samples for laboratory analysis. Samples submitted for laboratory analysis will be selected at the rate of one sample for every 10 feet of drilling. These soil samples will be analyzed for volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), and inorganic compounds included in Appendix A of this work plan.

Additional subsurface soil samples will also be collected from Geoprobe borings to evaluate background conditions. Background subsurface soil samples will be collected at intervals of 5, 10, and 15 feet from three borings advanced on the Xcel Energy property east, south, and west of the former MGP. These three borings will be advanced within 15 feet of the North side of Lakeshore Drive between Prentice and 3rd Avenues at locations 50, 100, and 150 feet west of Prentice Avenue. These locations were chosen to represent upgradient soil background outside the limits of the filled ravine. Seven of these samples will be selected for laboratory analysis. Background subsurface soil samples will be analyzed for VOCs, SVOCs, and inorganic compounds included in Table 1 of this work plan.

Task 5 – Surface Soil Sample Collection and Vapor Monitoring Air Sample Collection

Soil samples will be collected from unpaved areas around the former MGP facility to evaluate potential contamination within surfical soils for the direct contact risk to human health. Soil sample locations SS-1 through SS-12 are shown on Figure 1. Samples collected from the SS-1, SS-10, SS-11, and SS-12 will be used to represent background conditions.

At each sample location, soil will be collected from a depth between 3 and 12-inches utilizing hand tools. Samples will be placed in laboratory containers, held on ice, and shipped to the laboratory along with a completed chain-of-custody form. All samples will be analyzed for VOCs, SVOCs, and inorganic compounds included in Appendix A of this work plan.

Air samples will also be collected to evaluate the inhalation pathway for exposure to potential hazardous vapors generated at the site. Air monitoring will be completed at the following locations:

- In the living space and basement of each home north of St. Claire street;
- In the living space and basement of two homes located on the east side of Prentice Ave. between St. Claire St. and Lakeshore Drive directly across from the former MGP;
- In the school basement and a classroom at Our Lady of the Lake School; and
- In the Xcel Energy building in the vicinity of the former MGP.

Vapor monitoring air samples collected from residential homes (approximately 7 home owners) will be contingent upon obtaining permission from each home owner, and the collection of samples from the school is contingent upon obtaining permission from the pastor of Our Lady of the Lake. The vapor air monitoring samples collected from the Xcel Energy building will be collected from the area with the highest concentrations of subsurface contamination. Additionally, three exterior, upwind samples will be collected to evaluate background conditions. (This number and locations were based on discussions with Mr. Henry Nehls-Lowe of the Wisconsin Department of Health and Family Services.) All samples will be analyzed for VOCs by Method TO14, and SVOCs by Method TO13. All vapor monitoring air samples will be collected in accordance with laboratory provided SOPs and USEPA draft guidance entitled *Evaluating The Vapor Intrusion To Indoor Air Pathway From Groundwater and Soils*

In addition to the collection of air samples to evaluate indoor air quality, air samples will also be collected to evaluate the sanitary sewer as a potential migration pathway for vapors. Two air samples will be collected from manholes along St. Claire Street between Prentice and 3rd Avenues. All samples will be analyzed for VOCs by Method TO14, and SVOCs by Method TO13. The collection of these samples will be contingent upon obtaining permission from the City of Ashland.

Task 6 – Groundwater Sample Collection

Groundwater samples will be collected from existing wells and the new piezometers during the next quarterly sampling event in accordance with the existing groundwater monitoring program described in the January 2003 quarterly status report.

Task 7 – Report Preparation

URS will prepare soil boring logs, well construction forms, and well development forms for well installation documentation. These forms will be included in the next quarterly groundwater monitoring report following well installation.

2.0 SCHEDULE

URS is prepared to initiate the tasks described in this work plan following approval of and incorporation in the final Administrative Order on Consent (AOC) currently being developed between Xcel Energy, Inc. and the Wisconsin Department of Natural Resources representing the United States Environmental Protection Agency. Well casing elevations will be surveyed concurrent with the collection of quarterly groundwater samples following well installation. We also recommend that vapor samples should be collected before the ground thaws, when vapor migration through the subsurface is maximized.

URS will submit a revised groundwater monitoring plan with the first quarterly report following well installation.

We look forward to your response. Please call us with questions.

Sincerely,

URS

David P. Trainor, P.E., P.G.
Principal

cc: Jerry Winslow, Xcel Energy
Dave Donovan, Xcel Energy
Dave Crass, Michael Best & Friedrich
Deb Johnson
John Robinson
Mark Gordon

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TABLES

Table 1
Analyte List
Ashland Lakefront Site - Ashland, Wisconsin

Analyte VOCs	Analyte SVOCs	Analyte Inorganics
Benzene	Acenaphthene	Arsenic
sec-Butylbenzene	Acenaphthylene	Aluminum
Ethylbenzene	Anthracene	Antimony
Styrene	Benzo(a)Anthracene	Barium
Toluene	Benzo(a)Pyrene	Beryllium
1,2,4-Trimethylbenzene	Benzo (e) Pyrene	Cadmium
1,3,5-Trimethylbenzene	Benzo(b)Fluoranthene	Calcium
Total Xylenes	Benzo (k) Fluoranthene	Chromium (+3)
	Benzo(g,h,i)Perylene	Chromium (+6)
	Chrysene	Cobalt
	Dibenzo(a,h)Anthracene	Copper
	Fluoranthene	Cyanide
	Fluorene	Iron
	Indeno(1,2, 3-cd)Pyrene	Lead
	1-Methyl Naphthalene	Magnesium
	2-Methyl Naphthalene	Manganese
	Naphthalene	Mercury
	Phenanthrene	Nickel
	Pyrene	Potassium
	Pyrene	Selenium
	Dibenzofuran	Silver
	Phenol	Sodium
	2-Methyl Phenol	Thallium
	3-Methyl Phenol	Vanadium
	4-Methyl Phenol	Zinc

FIGURE